

AMENDMENTS TO THE CLAIMS

Claims 1-10 canceled.

11. (New) An electromagnetic actuator comprising: an outer yoke; an inner yoke that is formed by molding a soft magnetic iron powder and that is so arranged as to face an inside of the outer yoke; a coil portion that is provided at the outer yoke; a permanent magnet that reciprocates in accordance with a magnetic flux generated by the coil portion arranged between the outer yoke and the inner yoke; and a reciprocator that supports the permanent magnet, wherein the inner yoke is formed of a plurality of divisions formed axially and combined together.

12. (New) The electromagnetic actuator according to claim 11, wherein a projection is formed on one surface of the divided portion of the inner yoke and a depression is formed on another surface thereof with which depression the projection fits.

13. (New) The electromagnetic actuator according to claim 11,

wherein the inner yoke includes a discontinuous portion for preventing occurrence of eddy current loss, the discontinuous portion having a notch extended axially from one end surface toward another end surface thereof.

14. (New) The electromagnetic actuator according to claim 12,
wherein the inner yoke includes a discontinuous portion for preventing occurrence of eddy current loss, the discontinuous portion having a notch extended axially from one end surface toward another end surface thereof.
15. (New) A Stirling engine comprising: the electromagnetic actuator according to claim 11; a piston connected to the reciprocator; a cylinder that stores the piston, and a displacer that reciprocates with a phase difference from the piston.
16. (New) A Stirling engine comprising: the electromagnetic actuator according to claim 12; a piston connected to the reciprocator; a cylinder that stores the piston, and a displacer that reciprocates with a phase difference from the piston.
17. (New) A Stirling engine comprising: the electromagnetic actuator according to claim 13; a piston connected to the reciprocator; a cylinder that stores the piston, and a displacer that reciprocates with a phase difference from the piston.
18. (New) A Stirling engine comprising: the electromagnetic actuator according to claim 14; a piston connected to the reciprocator; a cylinder that stores the piston, and a displacer that reciprocates with a phase difference from the piston.